

REMARKS/ARGUMENTS

In a Final Office Action dated October 20, 2006 claims 1–32 were rejected under § 102 based on Edsall. Applicants respectfully traverse the rejections and request consideration of the following arguments.

§ 102 Rejections

Claim 17

Claim 17 is treated here as exemplary of the independent claims and as best corresponding to the Final Office Action.

The Final Office Action addressed Applicants' argument regarding Edsall lacking processors in the input/output module. The Final Office Action stated that the connection 302, MAC 304 and switch 306 have functions corresponding to receiving, operating on and transmitting network traffic. Applicants respectfully disagree. The cited elements of Edsall do not operate on network traffic when the term is properly construed. Those devices merely receive and transmit frames. They perform no operations on a frame, that is, they do not change substantive portions of the frame. They merely receive and transmit the frame. Those functions cannot be considered "operating on" the network traffic. Therefore Edsall does not teach or suggest an input/output as required in the claims when all the terms are construed.

Claim 17 further requires "said input/output module and said control module being configured to interactively perform virtualization of a storage unit and one of snapshotting of data on a storage unit, journaling of data being written to a storage unit, or migrating data between first and second storage units . . ."

The Final Office Action correlates recitation in paragraph 43 of Edsall of point in time copying to be snapshotting and logging information to be journaling. The Final Office Action does not provide any citation to data migration, thus admitting that alternative element is not present or taught or suggested in Edsall. The Final Office Action addresses Applicants prior remarks about Edsall not teaching or suggesting snapshotting and journaling by indicating there was no explicit definition of terms, merely discussions on how to perform the operations. Applicants respectfully traverse the alleged snapshotting and journaling.

Applicants submit that the terms “snapshotting” and “journaling” are well known terms of art and the discussion in the present application confirms that Applicants are using the terms in their well known meanings. Applicants provide the following as example definitions used by those skilled in the art for the terms “snapshot” and “journal.” Both definitions are from www.searchostorage.com with search terms of “storage snapshot” and “file journaling.”

Storage snapshot – A storage snapshot is a set of reference markers, or pointers, to data stored on a disk drive, on a tape, or in a storage area network (SAN). A snapshot is something like a detailed table of contents, but it is treated by the computer as a complete data backup. Snapshots streamline access to stored data and can speed up the process of data recovery. There are two main types of storage snapshot, called the copy-on-write (or low-capacity) snapshot and the split-mirror snapshot. Utilities are available that can automatically generate either type.

Journaling file system – A journaling file system is a fault-resilient file system in which data integrity is ensured because updates to directories and bitmaps are constantly written to a serial log on disk before the original disk log is updated. In the event of a system failure, a full journaling file system ensures that the data on the disk has been restored to its pre-crash configuration. It also recovers unsaved data and stores it in the location where it would have gone if the computer had not crashed, making it an important feature for mission-critical applications.

This data replication technique ensures data integrity because updates to directories and bitmaps are constantly written to a serial log on disk before the original disk log is updated. In the event of a system failure, the data on the disk can be restored to its pre-crash configuration.

- a. warehousing
- b. scoreboarding
- c. journaling
- d. mining
- e. cloning

Were you correct? This week's answer is:

- c. journaling

As can be seen, snapshotting clearly is something different from the backup or point in time copying mentioned in Edsall. Similarly, journaling is not just logging of error or statistics as mentioned in Edsall. Both operations are significantly more complicated than the simple operations mentioned in Edsall and being able to perform the simple Edsall operations does not even begin to teach or suggest the much more complicated operations of snapshotting and journaling, the operations required in the claims, when the proper definitions of those terms of art are considered.

Thus where the terms or operations are given their conventional meaning as known to those skilled in the art, none of the three alternatives, data migrating, journaling, and snapshotting, one of which is required by the claims, are taught or suggested by Edsall so a further claim limitation is not met, the claim being allowable for this further reason.

The above arguments apply equally to the remaining independent claims so that all claims in the application are allowable.

Claim 18

The Final Office Action alleges that Edsall shows the virtual target task and virtual initiator task of the processors of claim 18 as the commands to host and storage devices. Applicants traverse this rejection. First, as noted above, Edsall teaches none of the required processors so there can be no such tasks. Alternatively, none of the elements defined in claim 18 to be in the input/output module are processors which can perform tasks, when tasks are properly defined as discussed below, so the limitations and requirements of claim 18 simply cannot be met by Edsall.

The Final Office Action discusses virtualization and SCSI protocol generally and then states that “virtual initiator task” and “virtual target task” are the commands used to communicate with the host and storage devices, with passing reference to Edsall paragraph 45. Applicants submit that characterizing tasks of a processor as commands to devices is completely improper and unsupported. Processor tasks are more properly considered to be jobs, programs or the like. Consider multi-tasking operation systems. Each operation is broken into individual

tasks with multiple tasks being performed simultaneously. Another analogy is a thread. Commands do not correlate to tasks when tasks are properly defined according to the common usage in the art.

Applicants then note that the claim requires specific, separate tasks of virtual initiator and virtual target. Edsall does not teach or suggest such a specific separation of tasks. Edsall only generally describes operations that are performed, not the details on how those mechanisms are performed.

As a result, Edsall does not and cannot teach or suggest processors in an input/output module performing the specified tasks so that the claim is allowable. As such, Edsall is not a proper reference for the specific required elements of claim 18, so that claim 18, and similar claims 2, 10, and 26, are allowable.

Claim 18 versus Claim 19

The Final Office Action did not directly address Applicants' argument that the rejections of claims 18 and 19 are inconsistent and requested clarification.

Applicants are aware that claims 18 and 19 do not depend from each other and that the claims are different so that a different rejection is proper. However, that does not allow identical terms to be construed differently in the two claims. The rejection of claim 19 states that the logic of virtual processor 308 is the virtualization processor of claim 19 and includes the virtual target, volume manager mapping block and virtual initiator. This is the only element in Edsall cited in claim 19 to support the rejection. Referencing then the rejection of claim 17, the virtual processor 308 is recited as corresponding to the control module. Taking this definition from claim 17 in combination with the fact that only the virtual processor 308 is cited in claim 19 as meeting the virtualization processor, it leaves no elements in the input/output module as forming part of the virtualization processor. That may meet claim 19, though Applicants do not concede the point, but comparing this effective definition that none of the virtualization processor is in the input/output module to the allegation in the rejection of claim 18 that the input/output module includes a processor that performs virtual initiator and virtual target tasks, which are clearly virtualization processes, shows the inconsistency. The rejection of claim 19 characterizes the virtualization as being done only in the control module but claim 18 requires virtualization tasks

in the input/output module. Thus the rejections of the two claims are inconsistent. Therefore one of the two rejections is improper and must be withdrawn. Applicants leave it to the Examiner to select one but submit that one must be withdrawn.

Claim 19

In rejecting claim 19, as noted above, there is no recitation of any elements of Edsall to correspond to the input/output module of the claim. Thus a required element is not defined. Further claim 19 requires specific elements, not just general allegations. Applicants submit that merely having addresses (and clearly that a switch does not have an address) is insufficient to meet the specific claim requirements so that claims 19, 3, 11 and 27 are allowable. Applicants have repeated this argument as it was not addressed in the Final Office Action.

Claim 21

The arguments from claim 18 apply equally to claim 21 and its similar claims.

CONCLUSION

Based on the above remarks Applicants respectfully submit that all of the present claims are allowable. Reconsideration is respectfully requested.

Respectfully submitted,

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